Journal of Archaeological Science: Reports 17 (2018) 137–143

Contents lists available at ScienceDirect

Journal of Archaeological Science: Reports

journal homepage: www.elsevier.com/locate/jasrep

A model for pastoral mobility in Iron Age Kazakhstan

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ARTICLE INFO

Keywords:
Central Asia
Kazakhstan
Pastoralism
Iron Age
Seasonality
Cementum analysis

ABSTRACT

Recent research in Central Asia has altered our understanding of mobility and local economies during the Bronze and Iron Ages. In this paper, we present new data from Tuzusai, an Iron Age (400 cal BCE–1 cal CE) site in southeast Kazakhstan. Multiple lines of evidence have suggested that Tuzusai was part of an agro-pastoral system, and that people may have been present at Tuzusai year-round. We performed an analysis of cementum annulations in caprine (sheep/goat) teeth from Tuzusai, which gives direct evidence for seasonal slaughter patterns. Our results demonstrate that animals were slaughtered at Tuzusai year-round, and that there was a spike in the fall which was likely due to herd management strategies. To date, these results are the strongest line of evidence that people were present at Tuzusai throughout the year. We use ethnographic analogy to discuss the nature of a community in which some people were sedentary and others were mobile. We also argue that our results can be used as a model to help determine mobility at other sites in the region for which there are fewer lines of evidence describing the local economy.

1. Introduction

Archaeological and historical models of Central Eurasia have long treated the region as a crossroads inhabited by mobile pastoralists. Research questions have focused on the ways in which mobility facilitated the spread of peoples, goods, and ideas. Mobile groups may have migrated across the steppe as early as the Eneolithic (Anthony, 2007). In the Bronze Age, mobile groups moved through the mountains, spreading new technologies along with them (Doumani and Frachetti, 2012; Frachetti, 2012, 2011). In the Iron Age, these mobile groups formed hierarchical societies (Baipakov and Taimagambetov, 2006), known to history as nomadic states like the Scythians (Herodotus, 1987).

However, recent archaeological studies have increasingly questioned the extent to which early Central Eurasian economies were dominated by mobile pastoralism. Isotopic analyses of human diet during the Bronze Age in different regions of Kazakhstan indicate a substantial agricultural component (Lightfoot et al., 2015; Motuzaite-Matuzeviciute et al., 2015). In southeast Kazakhstan (Semirech'ye), there is now palaeobotanical evidence of agricultural production as early as 1490–1260 cal BCE (Spengler et al., 2014). This evidence puts Semirech'ye at the heart of research on the spread of agricultural products during the Bronze Age (Doumani et al., 2015; Spengler, 2015; Spengler et al., 2014), and even links the region's economy to that of Western China during the Bronze Age (Betts et al., 2014).

Evidence for mixed economies in Central Eurasia continues into the Iron Age. Isotopic and palaeobotanical analyses demonstrate an agricultural component of the human diet in this later period as well (Motuzaite-Matuzeviciute et al., 2012; Murphy et al., 2013). In addition, palaeobotanical data from Semirech'ye one again provide evidence of agricultural production during the Iron Age (Chang, 2017a; Chang et al., 2003; Rosen et al., 2000; Spengler et al., 2013). As it becomes increasingly clear that people had mixed economies, the extent of their mobility or sedentism must also be examined. Although agro-pastoral systems have been studied in other world regions, the way these two sectors of the economy articulated in Iron Age Semirech'ye needs to be investigated further.

In this paper we add to the overall understanding of pastoral economies by discussing a case study from an Iron Age (400 cal BCE to 1 cal CE) site in southeast Kazakhstan. Tuzusai is the most extensively studied settlement for the region and time period. Multiple lines of evidence, including mudbrick and pit-house architecture and agricultural remains, indicate that this settlement was likely occupied year-round by people engaged in agricultural production (Chang, 2017a; Chang et al., 2003). The settlement also has a faunal assemblage consisting predominantly of caprine (sheep and goat) remains, indicating a significant pastoral component to the economy as well (Benecke, 2003; Lyublyanovics, 2012). The first author conducted a study of cementum

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https://doi.org/10.1016/j.jasrep.2017.10.029
Received 10 August 2017; Received in revised form 21 October 2017; Accepted 22 October 2017

annulations in caprine teeth in order to determine the seasonality of occupation at Tuzusai, and to explore whether this line of evidence can be used to create a model for how agro-pastoral communities in Semirech'ye managed herd movement.

The application of cementum annulation data to determine season of occupation at an agro-pastoral settlement poses a novel challenge for two reasons. First, the seasonal occupation patterns of the inhabitants of the site are often difficult to substantiate archaeologically, and second, evidence drawn from faunal collections may indicate either seasonal occupation or seasonal patterning in butchering. Thus, we discuss analytical methods for using the cementum data to distinguish year-round occupation at a settlement from statistical noise. We also use ethnographic analogy and other lines of evidence to refine our model for occupation in one season or in multiple seasons. For example, based on the architecture and agriculture found at Tuzusai, we would expect at least part of the population to be present throughout the year. Our analysis will help to determine whether people also kept animals with them throughout the year, or whether some part of the population moved seasonally with the animals.

2. Background

2.1. Region

The Semirech'ye region of southeastern Kazakhstan is a large, circumscribed geographic area. The name means “seven rivers,” and refers to the rivers that feed Lake Balkhash. These rivers begin to the southeast, in the Tian Shan and the Dzungarian Alatau ranges, where they are fed by glacial meltwaters. The mountain ranges mark the southern and eastern limits of the region, and Lake Balkhash marks the northern and western limits. Compared to the surrounding steppe, many parts of Semirech'ye are and were a relative oasis. The rivers provide year-round access to water, the gradations in elevation provide ample pasturage for herds, and there are locations where agriculture is possible (Fig. 1).

The archaeological record from the Iron Age (first millennium BCE) in Semirech'ye is similar to the archaeological record for this period in other parts of the steppe. In the standard view for this period in Eurasian history, local economies consisted of mobile pastoralism combined with limited fishing and hunting. In addition, because populations were mobile, most settlements would not be visible archaeologically (Cribb, 1991). Thus, the majority of data come from kurgan burials that contain the “Scythian Triad” of grave goods. The kurgans in Semirech'ye are among the largest in the eastern steppe. The burial complexes at Issyk (Akishev, 1978) and Besshatyr are well known for their size and opulence. The complex at Issyk is located due east of the Talgar alluvial fan, about 25 km from some of the first settlements excavated in the region.

Beginning in the late 1990s, Chang and Tourtellote conducted pedestrian survey in the Talgar alluvial fan (Chang et al., 2002). Survey covered three different altitudinal zones, demarcated as follows:

For the high elevation range, the upper boundary was set at the upper limit for conducting upland agriculture in this part of the Tian Shan. At all elevations, surveys documented both burial complexes and artifact scatters consisting of ceramics and faunal remains. These artifact scatters are identified as sites that include the Bronze Age (2500 BCE) to the contemporary period. The highest concentration of sites was documented at low elevation, on the Talgar Fan. Subsequent excavation focused on artifact scatters from the Iron Age on the Talgar Fan (1150 m.a.s.l. to 550 m.a.s.l.). The three excavated settlements were occupied from 400 cal BCE to 1 cal CE (Table 1).

Three settlements have been the focus of excavation: Tuzusai, Tseganka 8, and Taldy Bulak 2. All three settlements have faunal assemblages that are all 60 to 70% caprine, with the remainder being primarily cattle and horse (Benecke, 2003). Furthermore, all three settlements have evidence of mud-brick architecture, storage pits for agricultural products, and pit-house style dwellings with multiple replastering events on floor surfaces. The presence of agricultural products has been demonstrated through phytolith analysis (Rosen et al., 2000), and supported by macrobotanical analysis at Tuzusai (Spengler et al., 2013) (Table 2).

The macrobotanical analysis contained domestic grains in all contexts sampled, but the storage pits contained little to no chaff, which Spengler et al. (2013) suggest is indicative of intensive agricultural production. They argue that people practicing more opportunistic agriculture would not bother to clean the grain as thoroughly. The case

Fig. 1. Location of site. Map created using Natural Earth data in QGIS.